

REMARKS

The applicant respectfully requests reconsideration in view of the above-amendments and following remarks. Support for amended claim 1 (the additives) can be found in the published specification in paragraph no. 54 and claim 4. Support for newly added claim 20 can be found in the original claim 4. No new matter has been added.

Claims 1-5, 7-12, 14-17 are provisionally rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over: (a) claims 22-41 of copending Application No. 11/576,309 (U.S. 2007/0264514) (“‘309 application”), or (b) claims 1-17 of copending Application No. 11/846,964 (U.S. 2008/0029934) (“‘964 application”); in view of U.S. Patent No. 6,296,797 (“Ziegler”) and in view of US 2001/0041772 (“Masubuchi”). Claims 1-5, 7-12, 14-17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ziegler et al, in view of US 2004/0121175 (“Flexman”), and in view of Masubuchi. The applicant respectfully traverses these rejections.

Double Patenting Rejections

Claims 1-5, 7-12, 14-17 are provisionally rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over: (a) claims 22-41 of the ‘309 application or (b) claims 1-17 of the ‘964 application in view of Ziegler and in view of Masubuchi.

Obviousness-type double patenting as defined is when claims in a patent application are not patentably distinguishable from claims in a patent (MPEP 804). The test applied to determine obviousness-type double patenting exists is whether or not the claims in the application define merely an obvious variation of the invention disclosed and claimed in the patent (In re Vogel and Vogel, 164 USPQ 619 (CCPA 1970). If claims are unobvious over 35 U.S.C. ' 103, there can be no double patenting (In re White and Langer, 160 USPQ 417 (CCPA

1969)). The examiner refers that these claims overlap or at least encompass each other. The examiner has apparently confused domination with double patenting. Domination occurs when a patent has a broader generic claim which reads on an invention defined by a narrower or more specific claim in another patent. Domination is not double patenting, per se. Domination is an irrelevant fact since a later invention may be validity patented though dominated by an earlier patent (In re Kaplan, 229 USPQ 678 (CAFC 1986)). Further, the overlapping of claims is not a significant or controlling factor in obviousness-type double patenting (In re Longi et al., 225 USPQ 645 (CAFC 1985)). The proper consideration of obviousness type doubling patenting is the improper extension of the patent right. The applicants believe that these applications are patentably distinct for the reasons stated below.

The examiner stated in the rejection that both copending applications '309 and '964 claim composite bodies where the elastomeric component comprises a thermoplastic polyester elastomer or thermoplastic polyetherester elastomer. This is an overgeneralization and misconstrues the claims for the reasons stated below.

Regarding the '309 claims:

The claims in '309 application are as follows:

1-21. (Canceled)

22. A composite body comprising a polyacetal portion and a modified thermoplastic vulcanizate portion bonded together, wherein the modified thermoplastic vulcanizate portion comprises a modified thermoplastic vulcanizate elastomer having a hardness of 30 to 90 Shore A and **wherein the modified thermoplastic vulcanizate elastomer comprises:**

(a) 2 to 75% by weight of an at least partially crosslinked ethylene-propylene-diene rubber in from 1 to 50% by weight of a polyolefinic matrix further comprising 0.05 to 10% by weight of an

ingredient selected from the group consisting of stabilizers, crosslinking aids, and mixtures thereof;

(b) 1 to 30% by weight of a compatibilizer; and

(c) 10 to 70% by weight of a non-olefinic thermoplastic material,

all percentages by weight based on a total weight of the modified thermoplastic vulcanizate elastomer.

23. The composite body according to claim 22, wherein the modified thermoplastic vulcanizate elastomer has a compression set value after 24 hours at 70°C of less than 65%.

24. The composite body according to claim 22, wherein the composite body has a peel resistance of at least 0.5 N/mm.

25. The composite body according to claim 23, wherein the composite body has a peel resistance of at least 0.5 N/mm.

26. The composite body according to claims 22, wherein the polyacetal portion comprises a polyoxymethylene copolymer.

27. The composite body according to claim 22, wherein the modified thermoplastic vulcanizate elastomer further comprises one or more additional components selected from the group consisting of plasticizer oils, organic fillers, inorganic fillers, reinforcing materials and combinations thereof.

28. The composite body according to claim 22, wherein the non-olefinic thermoplastic material comprises a polymeric material selected from the group consisting of thermoplastic polyester urethane elastomers, thermoplastic polyether urethane elastomers, thermoplastic polyesters, thermoplastic polyesterester elastomers, **thermoplastic polyetherester elastomers**, thermoplastic polyetheramide elastomers, thermoplastic polyamides, thermoplastic polycarbonates, thermoplastic polyacrylates, acrylate rubbers, styrene-acrylonitrile-acrylate rubbers, and mixtures thereof. (emphasis added)

29. The composite body according to claim 22, wherein the polyolefinic matrix comprises polypropylene.

30. The composite body according to claim 22, wherein the component (a) of the modified thermoplastic vulcanizate elastomer has an unreacted crosslinking agent content below 0.1% by weight, based on the total weight of the modified thermoplastic vulcanizate elastomer.

31. The composite body according to claim 22, wherein the compatibilizer comprises a component selected from the group consisting of functionalized styrene-olefin block copolymers, methacrylate-

butadiene-styrenes, methyl methacrylate-acrylonitrile-butadiene-styrenes, functionalized ethylene-propylene-diene rubbers, ethylene-propylene rubber, functionalized polyolefins, and mixtures thereof.

32. The composite body according to claim 22, wherein the polyacetal portion comprises a molding and the modified thermoplastic vulcanizate portion forms at least a partial coating of the polyacetal portion.

33. The composite body according to claim 22, wherein the polyacetal portion comprises a molding and the modified thermoplastic vulcanizate portion comprises a further molding bonded onto the polyacetal portion.

34. The composite body according to claim 22, wherein one of the polyacetal portion and the modified thermoplastic vulcanizate portion is bonded to the other portion by injection molding.

35. A composite body comprising a **polyoxymethylene copolymer** portion and a modified thermoplastic vulcanizate portion bonded together, wherein the modified thermoplastic vulcanizate portion comprises a modified thermoplastic vulcanizate elastomer having a hardness of 30 to 90 Shore A and wherein the **modified thermoplastic vulcanizate elastomer comprises:**

(a) 2 to 75% by weight of an at least partially crosslinked ethylene-propylene-diene rubber in from 1 to 50% by weight of a polyolefinic matrix further comprising 0.05 to 10% by weight of an ingredient selected from the group consisting of stabilizers, crosslinking aids, and mixtures thereof;

(b) 1 to 30% by weight of a compatibilizer; and

(c) 10 to 70% by weight of a non-olefinic thermoplastic material,

all percentages by weight based on a total weight of the modified thermoplastic vulcanizate elastomer; wherein the modified thermoplastic vulcanizate elastomer has a compression set value after 24 hours at 70°C of less than 65%; wherein the composite body has a peel resistance of at least 0.5 N/mm; wherein the polyolefinic matrix comprises polypropylene; and wherein the compatibilizer comprises a component selected from the group consisting of functionalized styrene-olefin block copolymers, methacrylate-butadiene-styrenes, methyl methacrylate-acrylonitrile-butadiene-styrenes, functionalized ethylene-propylene-diene rubbers, ethylene-propylene rubber, functionalized polyolefins, and mixtures thereof. (emphasis added)

36. A process comprising:

(a) providing a first molding; and

(b) bonding a second molding to the first molding by an injection molding application;

wherein the first molding comprises one of a polyacetal material and a modified thermoplastic vulcanizate elastomer, and the second molding comprises the other of the polyacetal material and the modified thermoplastic vulcanizate elastomer; and wherein the modified thermoplastic vulcanizate elastomer comprises:

(i) 2 to 75% by weight of an at least partially crosslinked ethylene-propylene-diene rubber in from 1 to 50% by weight of a polyolefinic matrix further comprising 0.05 to 10% by weight of an ingredient selected from the group consisting of stabilizers, crosslinking aids, and mixtures thereof;

(ii) 1 to 30% by weight of a compatibilizer; and

(iii) 10 to 70% by weight of a non-olefinic thermoplastic material;

all percentages by weight based on a total weight of the modified thermoplastic vulcanizate elastomer. (emphasis added)

37. The process according to claim 36, wherein the second molding comprises a coating of at least a portion of a surface of the first molding.

38. The process according to claim 36, wherein the injection molding application comprises a multi-component injection molding process.

39. The process according to claim 38, wherein the first molding comprises the polyacetal, wherein the first molding is preheated to a temperature of from 80°C to less than its melting point prior to bonding of the second molding, wherein during the bonding of the second molding the modified thermoplastic vulcanizate elastomer has a melt temperature of 170° to 270°C, and wherein the process is carried out in a mold having a mold temperature of 20° to 140°C.

40. The process according to claim 38, wherein the first molding comprises the modified thermoplastic vulcanizate elastomer, wherein the first molding is preheated to a temperature of from 20°C to 80°C prior to bonding of the second molding, wherein during the bonding of the second molding the modified thermoplastic vulcanizate elastomer has a melt temperature of 170° to 270°C, and wherein the process is carried out in a mold having a mold temperature of 20° to 140°C.

41. An article comprising a composite body according to claim 22, wherein the composite body is shaped to provide sealing or damping.

The '309 claims recite a modified thermoplastic vulcanizate bonded to polyoxymethylene ("POM"). The modified thermoplastic vulcanizate comprises (a) at least partially crosslinked EPDM rubber in polyolefin; (2) a compatibilizer, and (3) a non-olefinic thermoplastic material.

Claim 28 of '309 application defines the non-olefinic thermoplastic material as selected from the group consisting of thermoplastic polyester urethane elastomers, thermoplastic polyether urethane elastomers, thermoplastic polyesters, thermoplastic polyesterester elastomers, thermoplastic **polyetherester elastomers**, thermoplastic polyetheramide elastomers, thermoplastic polyamides, thermoplastic polycarbonates, thermoplastic polyacrylates, acrylate rubbers, styrene-acrylonitrile-acrylate rubbers, and mixtures thereof.

The applicant has amended claim 1 to distinguish the polyetherester as such from a polyetherester which is a component of the elastomers used in the '309 application, and to distinguish the POM from a blend of POM and polyesterester elastomer.

Thus, the '309 application claims a composite of POM bonded to the vulcanizate comprising three components, one of which can be a polyetherester elastomer.

The examiner ignores the fact that the '309 polyetherester is part of the 3-component mixture of (1) vulcanizate elastomer containing EPDM rubber in a polyolefinic matrix, (2) a compatibilizer, and (3) a non-olefinic thermoplastic material.

The claims in '964 application are as follows:

1. A composite article made from polyacetal and from at least one **modified styrene-olefin elastomer**, formed by a polyacetal molding which has to some extent or completely been **coated with the modified styrene-olefin elastomer**, or to which one or more moldings made from the modified styrene-olefin elastomer have been directly molded-on, where **the modified styrene-olefin elastomer is a composition which comprises from 20 to 85% by weight of functionalized and/or non-functionalized styrene-olefin block copolymer, built up from rigid end-blocks of styrene and from flexible middle blocks of olefin, and from 15 to 70% by weight of non-olefinic thermoplastic material, and also at least 5 parts by weight**

respectively and not more than 200 parts by weight respectively of lubricating plasticizer and/or inorganic filler per 100 parts by weight of styrene-olefin block copolymer, and wherein the modified styrene-olefin has a Shore A hardness of from 30 to 90. (emphasis added)

2. A composite article as claimed in claim 1, wherein the polyacetal and the modified styrene-olefin elastomer have been adhesively bonded to one another.

3. A composite article as claimed in claim 1, wherein the strength of the bond between the polyacetal and the modified styrene-olefin elastomer is at least 0.5 N/mm^2 .

4. A composite article as claimed claim 1, wherein the polyacetal used comprises a polyoxymethylene copolymer.

5. A composite article as claimed in claim 1, wherein the non-olefinic thermoplastic material has been selected from the class consisting of thermoplastic polyesterurethane elastomers, thermoplastic polyetherurethane elastomers, thermoplastic polyesters, thermoplastic polyesterester elastomers, **thermoplastic polyetherester elastomers**, thermoplastic polyetheramide elastomers, thermoplastic polyamides, thermoplastic polycarbonates, thermoplastic polyacrylates, acrylate rubbers and styrene-acrylonitrile-acrylate rubbers (ASA). (emphasis added)

6. A composite article as claimed in claim 1, in the form of a molding made from polyacetal, which has been entirely or to some extent coated with the modified styrene-olefin elastomer.

7. A composite article as claimed in claim 1, in the form of a molding made from polyacetal, to which at least one other molding made from the modified styrene-olefin elastomer has been molded-on.

8. A composite article as claimed in claim 1, which has been produced by multicomponent injection molding.

9. A composite article as claimed in claim 8, wherein the molding is firstly molded from polyacetal and then a coating or a molding made from the modified styrene-olefin elastomer is injected onto the polyacetal molding.

10. A process for producing a composite article made from polyacetal and from at least one modified styrene-olefin elastomer, where the modified styrene-olefin elastomer comprises from 15 to 70% by weight of non-olefinic thermoplastic material, and where a molding is firstly molded from polyacetal, onto which is then molded a coating or at least one molding made from the modified styrene-olefin elastomer, giving an adhesive bond between the polyacetal and the modified styrene-olefin elastomer.

11. The process as claimed in claim 10, which is a multicomponent injection-molding process carried out in a mold, where the molding made from polyacetal has been preheated to a temperature in the range from 80°C to just below its melting point prior to molding-on of the modified styrene-olefin elastomer, the melt temperature of the modified styrene-olefin elastomer is from 200 to 270°C during molding onto the molding made from polyacetal, and the temperature control of the mold has been set to a temperature in the range from 20 to 140°C.

12. The process as claimed in claim 11, wherein the molding made from polyacetal has been preheated to a temperature in the range from 100 to 160°C, the melt temperature of the modified styrene-olefin elastomer is from 220 to 260°C, and the temperature control of the mold has been set to a temperature in the range from 30 to 80°C .

13. A composite article as claimed in claim 2, wherein the strength of the bond between the polyacetal and the modified styrene-olefin elastomer is at least 0.5 N/mm² and the modified styrene-olefin has a Shore A hardness of from 40 to 80.

14. A composite article as claimed claim 13, wherein the polyacetal used comprises a polyoxymethylene copolymer.

15. A composite article as claimed in claim 14, wherein the non-olefinic thermoplastic material has been selected from the class consisting of thermoplastic polyesterurethane elastomers, thermoplastic polyetherurethane elastomers, thermoplastic polyesters, thermoplastic polyesterester elastomers, thermoplastic polyetherester elastomers, thermoplastic polyetheramide elastomers, thermoplastic polyamides, thermoplastic polycarbonates, thermoplastic polyacrylates, acrylate rubbers and styrene-acrylonitrile-acrylate rubbers (ASA).

16. The process as claimed in claim 10, wherein the modified styrene-olefin elastomer comprises from 20 to 50% by weight of non-olefinic thermoplastic material, and 35 to 70% by weight of maleic anhydride-functionalized and/or non-functionalized tri-block copolymer which have been built up from rigid end-blocks of styrene and from flexible middle blocs of olefin.

17. The process as claimed in claim 16, which further comprises at least 5 parts by weight and not more than 200 parts by weight of a lubricating plasticizer or an inorganic filler or a mixture of the lubricating plasticizer and the inorganic filler, per 100 parts by weight of styrene-olefin block copolymer.

The '964 claimed inventions requires "the modified styrene-olefin elastomer is a composition which comprises

from 20 to 85% by weight of functionalized and/or non-functionalized styrene-olefin block copolymer, built up from rigid end-blocks of styrene and from flexible middle blocks of olefin, and

from 15 to 70% by weight of non-olefinic thermoplastic material, and also

at least 5 parts by weight respectively and

not more than 200 parts by weight respectively of lubricating plasticizer and/or inorganic filler per 100 parts by weight of styrene-olefin block copolymer”

The ‘964 application, like the ‘309 application, claims the elastomer composite component, as a modified styrene-olefin elastomer which is a composition comprising styrene-olefin component and non-olefinic thermoplastic. Claim 5 defines the non-olefinic material is selected from the same list of materials as in claim 28 of the ‘309 claims, including polyetherester elastomer.

The applicant has amended claim 1 to distinguish the polyetherester as such from a polyetherester which is a component of the elastomers used in the ‘964 application, and to distinguish the POM from a blend of POM and polyesterester elastomer.

The instant polyetherester can be distinguished so as to be not envisioned nor obvious from the vulcanizate of the ‘309 claims nor the modified styrene-olefin elastomer of the ‘964 claims.

The examiner then relies upon Masubuchi to establish the existence of certain polyetherester elastomers, per se, known for their good properties. The examiner alleges the obviousness of incorporating this elastomer using the Zeigler molding techniques to form the articles claimed in the copending applications ‘309 and ‘964 (see page 4 of the Office Action). Given that combination, Masubuchi polyetherester elastomers would thus end up as part of the vulcanizate non-olefinic elastomer in ‘309, or as part of the non-olefinic thermoplastic incorporated into the styrene-olefin elastomer, which is not the claimed invention as amended.

This substitution does not result in the instant claimed invention, as amended. For the above reasons, these rejections should be withdrawn.

Rejection under 35 U.S.C. 103(a)

Claims 1-5, 7-12, 14-17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ziegler et al, in view Flexman, and in view of Masubuchi.

Ziegler discloses composite articles from polyacetal with directly molded-on functional elements made from one or more thermoplastic elastomers. As the examiner correctly stated at the bottom of page 5 of the office action, Ziegler does not disclose the use of polyetherester elastomers.

The examiner has relied up Masubuchi for the teaching of polyetherester elastomers having a typical hardness of Shore D 32 (see page 6 of the Office Action). Masubuchi disclosed a thermoplastic elastomer composition comprising

1. 100 parts by weight of thermoplastic polyester elastomer,
2. 3 to 100 parts by weight of modified olefin resin having an epoxy group or a derivative group thereof in its molecule and
3. 10 to 900 parts by weight of a rubbery elastomer selected from the group consisting of an olefin-based thermoplastic elastomers and styrene-based thermoplastic elastomers (see the abstract of Masubuchi).

The thermoplastic elastomer composition in Masubuchi can be used for various molding products having excellent scratch resistance, flexibility, heat resistance ... (see paragraph no. [0001] of Masubuchi).

The examiner generalizes Flexman as showing that it is well known to overmold polyacetal with polyester polyether elastomers. The applicants respectfully disagree.

Flexman actually discloses a blend of POM with any non-acetal polymer as a substrate and at least one additional layer deposited, as by overmolding thereon (see the Summary of the Invention). The difference between Flexman and the instant claimed invention is that an adhesion promoter is used in Flexman, whereas no such adhesion promoter is present in the polyacetal of the instant claims.

Flexman discloses a large list of any non-acetal polymer. Flexman stated in paragraph no. [00041]:

[0041] Amorphous non-acetal thermoplastic polymers, which are injection molding and extrusion grade, suited for use in the blends of the present invention are well known in the art and can be selected from those commercially available or can be made by processes known in the art. Examples of such suitable amorphous thermoplastic polymers include, but are not limited to, those selected from the group consisting of styrene acrylonitrile copolymers (SAN), SAN copolymers toughened with a mostly unsaturated rubber, such as acrylonitrile-butadiene-styrene (ABS) resins, or toughened with a mostly saturated rubber, such as acrylonitrile-ethylene-propylene-styrene resins (AES), polycarbonates, polyamides, polyarylates, polyphenyleneoxides, polyphenylene ethers, high impact styrene resins (HIPS), acrylic polymers, imidized acrylic resins, styrene maleic anhydride copolymers, polysulfones, styrene acrylonitrile maleic anhydride resins, and styrene acrylic copolymers, and derivatives thereof and blends thereof. The preferred amorphous thermoplastic polymers are selected from the group consisting of styrene acrylonitrile copolymers (SAN), SAN copolymers toughened with a mostly unsaturated rubber, such as acrylonitrile-butadiene-styrene (ABS) resins, or toughened with a mostly saturated rubber, such as acrylonitrile-ethylene--propylene-styrene resins (AES), polycarbonates, polyamides, polyphenyleneoxides, polyphenylene ethers, high impact styrene resins (HIPS), acrylic polymers, styrene maleic anhydride copolymers, and polysulfones, and derivatives thereof and blends thereof. The more preferred amorphous thermoplastic polymers are selected from the group consisting of SAN, ABS, AES, polycarbonates, polyamides, HIPS, and acrylic polymers. Most preferred amorphous thermoplastic polymers are SAN copolymers, ABS resins, AES resins, and polycarbonates.

The at least one layer (e.g. overmolding) of Flexman is selected from a large amount of possibilities. Paragraph no. [0092] of Flexman stated:

[0092] Examples of suitable materials for overmolding include, but are not limited to, both polar and non-polar materials. Such non-polar materials include, but are not limited to, thermoplastic olefins (TPO), Kraton®, thermoplastic elastomers (TPE-S), polyethylene and polypropylene. Such polar materials include, but are not limited to, thermoplastic polyurethanes (TPU), Surlyn®, Hytrel® and polar olefins.

With almost endless amounts of combinations possible among the listed alternatives, it is insufficient as a matter of law to pick and choose one possible combination to render claims obvious in the absence of a teaching, suggestion or motivation to so chose, and a reasonable expectation of success should also be shown.

A statement that modifications of the prior art to meet the claimed invention would have been “obvious to one of ordinary skill in the art at the time the invention was made” because the references relied upon teach that all aspects of the claimed invention were individually known in the art is not sufficient to establish a *prima facie* case of obviousness without some objective reason to combine the teachings of the references. *Ex parte Levengood*, 28 USPQ2d 1300 (Bd. Pat. App. & Inter. 1993). See MPEP § 2143.01 IV. “[R]ejections on obviousness cannot be sustained by mere conclusory statements; instead, there must be some articulated reasoning with some rational underpinning to support the legal conclusion of obviousness.” *KSR International Co. v. Teleflex Inc.*, 82 USPQ2d 1385, 1396 (2007) quoting *In re Kahn*, 441 F.3d 977, 988 (Fed. Cir. 2006). Furthermore, the examiner cannot selectively pick and choose from the disclosed parameters without proper motivation as to a particular selection. The mere fact that a reference may be modified to reflect features of the claimed invention does not make the modification, and hence the claimed invention, obvious unless the prior art suggested the desirability of such modification. *In re Mills*, 916 F.2d 680, 682, 16 USPQ2d 1430 (Fed. Cir. 1990); *In re Fritch*, 23

USPQ2d 1780 (Fed. Cir. 1992). Thus, it is impermissible to simply engage in a hindsight reconstruction of the claimed invention where the reference itself provides no teaching as to why the applicant's combination would have been obvious. *In re Gorman*, 933 F.2d 982, 987, 18 USPQ2d 1885, 1888 (Fed. Cir. 1991).

Furthermore such a combination is not straightforward without modifying one or more of the teachings to arrive at the instant claims. Modification contrary to the teachings is required because Flexman requires a blend of POM with another polymer for promoting adhesion. One of ordinary skill in the art would not be motivated to remove the adhesion promoter with any reasonable expectation of success in combining POM with the methods of Zeigler.

In view of the above amendment, applicant believes the pending application is in condition for allowance.

A three month extension has been paid. Applicant believes no additional fee is due with this response. However, if a fee is due, please charge our Deposit Account No. 03-2775, under Order No. 05587-00409-US from which the undersigned is authorized to draw.

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